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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/503,041	02/11/2000	Rajiv Laroia	14-7-3-3	6041

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EXAMINER	
YAO, KWANG BIN	
ART UNIT	**PAPER NUMBER**
2667	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/503,041	LAROIA ET AL.	
	Examiner	Art Unit	
	Kwang B. Yao	2667	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *05 April 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-39* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-39* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Reopening of Prosecution

1. In view of the Appeal Brief filed on 4/5/04, PROSECUTION IS HEREBY REOPENED. New grounds of rejection are set forth below.

To avoid abandonment of the application, appellant must exercise one of the following two options:

(1) file a reply under 37 CFR 1.111 (if this Office action is non-final) or a reply under 37 CFR 1.113 (if this Office action is final); or,

(2) request reinstatement of the appeal.

If reinstatement of the appeal is requested, such request must be accompanied by a supplemental appeal brief, but no new amendments, affidavits (37 CFR 1.130, 1.131 or 1.132) or other evidence are permitted. See 37 CFR 1.193(b)(2).

Claim Rejections - 35 USC § 112

2. Claims 1-39 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1, the statement of "transmitting at least **one of** an uplink access signal and an uplink timing synchronization signal from a mobile station" is not consistent with the statement of "such than different timing **and** access signals from the mobile station ... received at the base station" (Emphasis added). In other words, if only the uplink access signal is transmitted, the

uplink timing synchronization signal won't be received the base station, as recited in lines 6-7. The same problem is found in claims 35-39.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1- 6, 13, 23, 35-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over the admitted prior art in view of Natali et al. (US 6,317,412).

The admitted prior art discloses a wireless communication system comprising the following features: as described on line 17 of page 1 to line 21 of page 2 of the present application, regarding claim 1, transmitting at least one of an uplink access signal and an uplink timing synchronization signal from a mobile station of the system to a base station of the system, wherein the at least one signal is from a signal set which includes a plurality of orthogonal signals; regarding claim 2 wherein the wireless system comprises an orthogonal frequency division multiplexed OFDM system; regarding claim 6, wherein the multitone signals are transmitted with a cyclic prefix sufficiently large to cover multipath dispersion and pre-synchronization timing errors; regarding claim 23, wherein received signal power can be estimated in the base station by a measure of maximum total cross-correlation energy; regarding claim 35, a mobile station system for use in a wireless communication system, the mobile station system being operative to transmit at least one of an uplink access signal and an uplink timing

synchronization signal from a corresponding mobile station of the system to a base station of the system, wherein the at least one signal is from a signal set which includes a plurality of orthogonal signals; regarding claim 36, an apparatus for use in a wireless communication system, the apparatus comprising: means for transmitting at least one of an uplink access signal and an uplink timing synchronization signal from a mobile station of the system to a base station of the system, wherein the at least one signal is from a signal set which includes a plurality of orthogonal signals, and means for generating the at least one signal to be transmitted; regarding claim 37, a method for use in a wireless communication system, comprising the step of: receiving at least one of an uplink access signal and an uplink timing synchronization signal in a base station of the system from a mobile station of the system, wherein the at least one signal is from a signal set which includes a plurality of orthogonal signals; regarding claim 38, an apparatus for use in a wireless communication system, the apparatus comprising: means for receiving at least one of an uplink access signal and an uplink timing synchronization signal in a base station of the system from a mobile station of the system, wherein the at least one signal is from a signal set which includes a plurality of orthogonal signals, and means for processing the received at least one signal; regarding claim 39, a base station system for use in a wireless communication system, the base station system being operative to receive at least one of an uplink access signal and an uplink timing synchronization signal from a mobile station of the system, wherein the at least one signal is from a signal set which includes a plurality of orthogonal signals.

The admitted prior art does not disclose the following features: regarding claim 1, such that different timing and access signals from the mobile station and at least one other mobile

station of the system are received at the base station orthogonal to one another over a base station sample window; regarding claim 3, wherein the signal set comprises a plurality of multitone signals, each of at least a subset of the multitone signals comprising a linear combination of tones whose baseband frequencies are integer multiples of 1 /T, where T is the base station sample window size; regarding claim 4, wherein the sample window size T for the timing and access signals is the same as that used in the system for OFDM data symbols; regarding claim 5, wherein each timing and access signal comprises a single multitone signal with different signals using non-overlapping subsets of tones, and further wherein the tones from all of the timing and access signals span the total available bandwidth; regarding claim 13, wherein the mobile station pre-computes a multitone timing and access signal and stores it in a memory associated with the mobile station; regarding claim 35, such that different timing and access signals from the mobile station and at least one other mobile station of the system are received at the base station orthogonal to one another over a base station sample window; regarding claim 36, such that different timing and access signals from the mobile station and at least one other mobile station of the system are received at the base station orthogonal to one another over a base station sample window; regarding claim 37, such that different timing and access signals from the mobile station and at least one other mobile station of the system are received at the base station orthogonal to one another over a base station sample window; regarding claim 38, such that different timing and access signals from the mobile station and at least one other mobile station of the system are received at the base station orthogonal to one another over a base station sample window; regarding claim 39, such that different timing and access signals from the

mobile station and at least one other mobile station of the system are received at a corresponding base station orthogonal to one another over a base station sample window.

Natali et al. discloses a spread spectrum communication system comprising the following features: The admitted prior art does not disclose the following features: The admitted prior art does not disclose the following features: as depicted in Figs .2, 7, 8, 9, regarding claim 1, such that different timing and access signals from the mobile station (USER #1) and at least one other mobile station (USER #2) of the system are received at the base station (HS) orthogonal to one another over a base station (HS) sample window (column 5, lines 16-62); regarding claim 3, wherein the signal set comprises a plurality of multitone signals, each of at least a subset of the multitone signals comprising a linear combination of tones whose baseband frequencies are integer multiples of 1 /T, where T is the base station (HS) sample window size (column 5, lines 16-62); regarding claim 4, wherein the sample window size T for the timing and access signals is the same as that used in the system for OFDM data symbols; regarding claim 5, wherein each timing and access signal comprises a single multitone signal with different signals using non-overlapping subsets of tones, and further wherein the tones from all of the timing and access signals span the total available bandwidth (column 5, lines 16 to column 6, line 32); regarding claim 13, wherein the mobile station (USER #1) pre-computes a multitone timing and access signal and stores it in a memory (10, 11, 16, 17) associated with the mobile station (USER #1); regarding claim 35, such that different timing and access signals from the mobile station (USER #1) and at least one other mobile station (USER #2) of the system are received at the base station (HS) orthogonal to one another over a base station (HS) sample window (column 5, lines 16-62); regarding claim 36, such that different timing and access signals from the mobile station (USER

#1) and at least one other mobile station (USER #2) of the system are received at the base station (HS) orthogonal to one another over a base station (HS) sample window(column 5, lines 16 to column 6, line 32); regarding claim 37, such that different timing and access signals from the mobile station (USER #1) and at least one other mobile station (USER #2) of the system are received at the base station (HS) orthogonal to one another over a base station (HS) sample window; regarding claim 38, such that different timing and access signals from the mobile station (USER #1) and at least one other mobile station (USER #2) of the system are received at the base station (HS) orthogonal to one another over a base station (HS) sample window (column 5, lines 16 to column 6, line 32); regarding claim 39, such that different timing and access signals from the mobile station (USER #1) and at least one other mobile station (USER #2) of the system are received at a corresponding base station (HS) orthogonal to one another over a base station (HS) sample window (column 5, lines 16 to column 6, line 32). It would have been obvious to one of the ordinary skill in the art at the time of the invention to modify the system of the admitted prior art, by using the features, as taught by Natali et al., in order to provide an efficient communication system by increasing capacity. See column 2, lines 13-18.

Allowable Subject Matter

5. Claims 7-12, 14-22, 24-34 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Conclusion

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kwang B. Yao whose telephone number is 703-308-7583. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chi H Pham can be reached on 703-305-4378. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

KWANG BIN YAO
PRIMARY EXAMINER

Kwang B. Yao
July 9, 2004